

FACTORS INFLUENCING CUSTOMER TRUST IN MOBILE BANKING: CASE OF LATVIA

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Abstract. The banking sector has developed and extended the use of its services in the past decade. In fact, nowadays mobile banking (M-banking) is the most developing service offered by a bank. In order to encourage customers to use m-banking services, it is extremely important to get clients to trust the M-banking services provided by the bank. This article discusses private clients' trust in mobile banking in Latvia. Hence, the goal of the research is to identify the key factors driving individual customer's confidence in mobile banking. In order to determine the weight of each factor, expert evaluation method based on analytic hierarchy process (AHP) was used. The results showed that the most vital factor affecting private clients' trust in mobile banking is customer characteristics, especially customers' computer literacy. However, after summarizing all the subfactors, it became clear that the most powerful in the trust-building process is convenience/practicality of using a mobile application. However, there is a limitation – the survey was conducted by interviewing experts, which means that the results may differ from the responses of the clients themselves.

Keywords: trust; mobile banking; analytic hierarchy process (AHP); expert evaluation; Latvia

JEL Classification: G21, G41.

Introduction

Trust is considered to be as one of the essential prerequisites for the successful development of relationships. Trust acts as a mediator in building long-term relationships/promoting customer loyalty (Kurt, Yamin, Sinkovics, & Sinkovics, 2016; Picón-Berjoyo, Ruiz-Moreno, & Castro, 2016) and reduces the social complexity, inevitable and growing in modern society (Østergaard, 2015; Tong, Zhang, & Wang, 2016). Some researchers believe that trust is a factor that ensures the quality of cooperation. According to Peek et al. (2016), trust is a component that determines the quality of communication. According to Skačkauskienė and Bytautė (2012), trust creates prerequisites for increasing the effectiveness of a group or organisation. Sekhon et al. (2013) state that trust is an essential component of developing and maintaining customer relationships in the service sector. Trust-based social relations help to successfully implement a business project, facilitate the signing of a cooperation agreement, attract new customers and obtain the necessary information from business partners.

Researchers investigating commercial banking sector agree that trust is a factor determining its success. Trust guarantees cooperation between the bank and the client. In fact, trust allows the bank to maintain/gain a competitive advantage. In other words, trust ensures high-quality social relationships with consumers and business partners of banking services, that is, provides the conditions necessary for the stability of the bank's operations. Thus, with the growing variety of services offered by commercial banks, trust has become a factor encouraging a customer to decide whether to accept innovations or not. One of these changes is mobile banking. Researchers studying mobile banking say that trust is one of the critical factors driving consumers to use mobile banking services (Afshan & Sharif, 2016; Baptista & Oliveira, 2016; Gumussoy, 2016; Malaquias & Hwang, 2016). Therefore, it is crucial to investigate how to build customer confidence in mobile banking.

The raised scientific problem is: what factors stimulate the emergence of individual consumer confidence in mobile banking? The object of the research is trust in mobile banking. The goal is to identify the key factors driving individual customer's confidence in mobile banking. The following

tasks have been set to achieve the goal: to analyse theoretical dimensions of individual clients' confidence in mobile banking, identifying determinants; to develop a methodology for testing trust in mobile banking; to identify critical determinants of individual customer confidence in mobile banking. The methods are a comparative analysis of scientific literature, classification, expert evaluation and analytical hierarchy process.

Theoretical background of trust in mobile banking

Mobile banking is a fast-paced service. Trends in mobile technology development are tied to innovations (Chiyangwa & (Trish) Alexander, 2016). Meanwhile, innovation often leads to consumer frightening, which in turn leads to distrust. For this reason, it is challenging to build consumer confidence in mobile banking. However, as information technology expands, mobile banking becomes an integral part of life. Therefore, it is necessary to identify the factors that determine consumer confidence in mobile banking, as many researchers argue that trust is a factor determining the continued use of mobile banking by consumers (Koenig-Lewis, Palmer, & Moll, 2010; Olouch, Abaja, Mwangi, & Githeko, 2015; Özkan, Bindusara, & Hackney, 2010; Rezaei, Kabiry, & Forghani, 2013; Zhou, 2011b). Kim, Ferrin and Rao (2008) argue that three variables are important for trust formation in mobile banking: relative benefits, the consumer's tendency to trust and structural assurance. Maroofi, Kahrarian and Dehghani (2013) identify the perceived benefits as well as ease of use and structural assurance as primary confidence-building factors. Jammoul (2012), Malaquias and Hwang (2016) argue that the significant impact on initial trust in mobile banking has a relative age of the user, structural assurance, a willingness to trust, social influence, computer literacy, system quality and a reputation of an organisation. Chemingui and Iallouna (2013) argue that the quality of the mobile banking system has a positive impact on consumer confidence. Zhou (2011a) also mentions structural assurance and system quality and points out the quality of information as an essential factor in building customer confidence. Gu, Lee and Suh (2009) in addition to structural assurance as a factor in boosting confidence in mobile banking pays attention to the perceived ease of use, which he claims to be an important factor in building trust. He understood the structural security as the existence of legal technological structures that ensure the safety of payments. Zhou (2011b) examines the factors that, he supposed, could positively affect the confidence in mobile banking, and they are as follows: perceived security, the perception to use it everywhere and perceived ease of use. Zhou (2014) highlights the existence of a mobile communication and contextual offer as factors influencing consumer trust in mobile transactions. He understood the contextual offer as a function that provides the customer with the most relevant information and services based on their (clients') allocation and preferences. Thakur (2014) states that ease of use and excellent customer service influences trust in mobile banking. The factors affecting the confidence in mobile banking were divided into six aggregate factors and their subfactors (Fig. 1) for a better perception.

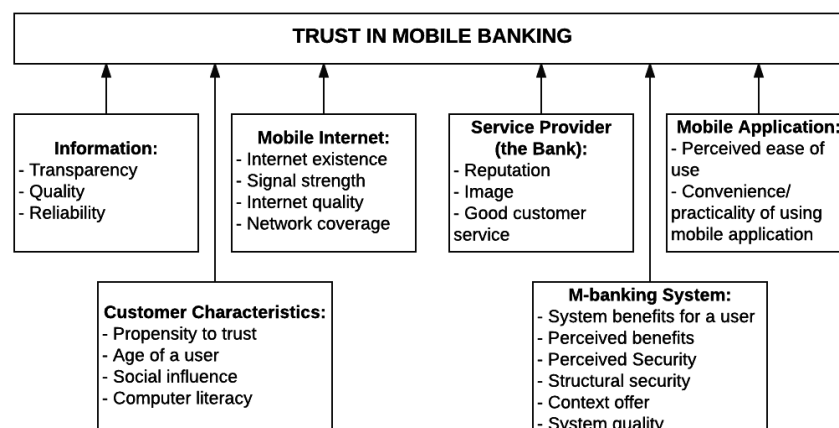


Fig. 1. Factors and Subfactors affecting the Confidence in Mobile Banking (Source: designed by authors based on the literature review)

In order to evaluate the influence of the factors mentioned above and subfactors for the development of trust in mobile banking, they were provided for expert assessment.

Methodology

For research conduction, expert evaluation method was chosen. Expert evaluation is a generalised opinion of specialists, the formation of which is determined by the knowledge, experience and intuition of experts (Sėrikovienė, 2013). One of the most important tasks is to choose the appropriate number of experts. Libby and Blashfield (1978) and Rudzkieńė (2009) recommend that the number of experts ought to be between 5 and 9, as in this case, the most precise assessment could be reached.

After determining the optimal number of experts, it is necessary to select a data processing method. In fact, one of the expert evaluation methods that is used to solve socio-economic problems is the analytic hierarchy process (AHP) (Thomas L. Saaty, 2012). The AHP method is used when expert assessments are uncertain (Ahn, 2017). Taking into account an uncertainty is especially important when studying of trust that is difficult to assess accurately.

According to the method, experts compare alternatives $\{\theta_1, \dots, \theta_n\}$ with each other by filling pairwise comparison matrices $A = (a_{ij})_{n \times n}$, where $a_{ij} = \frac{\omega_i}{\omega_j}, \forall i, j = 1, 2, \dots, n; \omega_n (n = 1, 2, \dots, n)$ – priority vector; $a_{ij} = \frac{1}{a_{ji}}, \forall i, j = 1, 2, \dots, n$.

For completing individual comparison matrices, experts were suggested to use balanced scale introduced by Salo and Hämäläinen (1997) having the following approximate values 1, 1.22, 1.5, 1.86, 2.33, 3, 4, 5.67, 9, where 1 means that the alternatives are equal and 9 means that one alternative is extremely more important than another.

After experts complete the pairwise comparison of the factors, all the assessments are written in a standardised matrix form and an arithmetic mean of each line is calculated. In this way, the primary factor is identified. However, before the procedure of weighting the factors, it is necessary to determine whether the individual matrices for comparison completed by the experts are consistent. Pairwise comparison matrix is considered to be consistent if there is a priority vector $\mathbf{w} = (\omega_1, \dots, \omega_n)$ such that $a_{ij} = \frac{\omega_i}{\omega_j}, \forall i, j$.

Pairwise comparison method of AHP evaluates the consistency of each expert's answers. The consistency level is indicated by consistency index (Saaty, 1993). In order to determine the consistency index, an eigenvalue of pairwise comparison matrix is calculated: $\lambda_{max} = \sum_{j=1}^n \frac{(A \cdot v)_j}{n \cdot v_j}$, where λ_{max} is the greatest eigenvalue of experts' views comparison matrices A , n is the number of independent rows in a matrix, v_j is an eigen value of a matrix. If experts' pairwise comparison matrix A is consistent, then $\lambda_{max} = n$. If there are minor a_{ij} changes and matrix A does not satisfy consistency condition, then the λ_{max} value is close to n . After the value of λ_{max} is computed, consistency index CI can be calculated: $CI = (\lambda_{max} - n)/(n - 1)$. For the purpose of assessing the consistency index, it was compared to random index (RI) and consistency ration (CR), which was computed by dividing consistency ratio by random index.

AHP method is considered as appropriate if $CR \in [0; 0.2)$ (Aksenov et al., 2014). For experts' pairwise comparison matrices that fulfil the consistency condition ($CR < 0.2$), the aggregated experts' assessment is calculated. Aggregated experts' assessment is calculated using geometric mean (Kostin, 2014; Wu, Chiang, & Lin, 2008). The consistency ratio calculation procedure is repeated for the resulting matrix, and if the aggregated matrix is consistent, priorities ω_j are computed using the normalised geometric mean method (2) (Franek & Kresta, 2014).

Empirical Findings

The investigation of individual clients' confidence in mobile banking took place in Latvia in March–April, 2016. Seven experts from Latvia participated in the study. Experts with banking experience were selected for the assessment of trust factors according to the following criteria:

1. occupied positions ought to be linked to banking;
2. education (at least Master degree);
3. work experience in the banking sector (at least three years).

The characteristics of the experts who participated in the study are presented in Table 1.

Table 1. Characteristics of Experts (Source: designed by authors)

Expert	Characteristics (occupation; degree; work experience)
E ₁	Head of a bank unit; Master degree in Business management; 10 years
E ₂	Investment analyst, professor; PhD in Social sciences; 8 years
E ₃	Associate professor of the Department of Enterprise Finance and Economics; PhD in Social sciences; 10 years
E ₄	Vice rector for Science; PhD in Economics; 15 years
E ₅	Financial controller; Master degree in Business administration; 5 years
E ₆	Tax expert; Master degree in Management; 4 years
E ₇	Head of a bank unit; Master degree in Management; 6 years

First of all, experts evaluated the factors influencing trust in mobile banking and then estimated their subfactors. By analysing the factors presented, the experts agreed that the customer and client's characteristics are the most important factor creating the trust of individual consumers in mobile banking in Latvia. The weight given to the client's characteristics is 0.226 and confirms that all mobile banking services should be consumer oriented in order to meet all their expectations. The second most important factor, according to the experts, is the mobile Internet (0.225). If there is no Internet connection, it is impossible to use mobile banking, and hence, there is no reason to trust it. Mobile banking system factor weight is not much lower than the weight of the second factor – 0.224. In fact, the m-banking system could be considered as a tool by which consumers can use mobile banking services; hence, the weight of the factor is high. In fact, no factor that is more important than the others are as they all are necessary for trust in mobile banking building process. Therefore, it is expedient to analyse all factors and their subfactors, in order to evaluate trust in mobile banking in Latvia as accurately as possible. The results are presented in Table 2.

Table 2. Weights Given by Experts to Factors and Subfactors Influencing Trust in Mobile Banking in Latvia (Source: author's calculations)

Factor, weight	Information, 0.078 (6)	$\lambda^* = 6.122, CR^{**} = 0.002$
Subfactor, sub weight	Transparency, 0.212 (3)	$\lambda = 6.122; CR = 0.002$
	Quality, 0.420 (1)	
	Reliability, 0.368 (2)	
Factor, weight	Customer characteristics, 0.226 (1)	$\lambda = 6.122, CR = 0.002$
Sub-factor, sub-weight	Propensity to trust, 0.223 (3)	$\lambda = 6.122; CR = 0.002$
	Age of a user, 0.274 (2)	
	Social influence, 0.203 (4)	

	Computer literacy, 0.301 (1)	
Factor, weight	Mobile Internet, 0.225 (2)	$\lambda = 6.122$, CR = 0.002
Sub-factor, sub-weight	Internet existence, 0.202 (4)	$\lambda = 4.041$; CR = 0.015
	Signal strength, 0.212 (3)	
	Internet quality, 0.300 (1)	
	Network coverage, 0.286 (2)	
Factor, weight	Service provider (the bank), 0.098 (5)	$\lambda = 6.122$, CR = 0.002
Sub-factor, sub-weight	Reputation, 0.331 (2)	$\lambda = 3$; CR = 0
	Image, 0.251 (3)	
	Good customer service, 0.418 (1)	
Factor, weight	M-banking system, 0.224 (3)	$\lambda = 6.122$, CR = 0.002
Sub-factor, sub-weight	System benefits for a user, 0.158 (4)	$\lambda = 6.122$; CR = 0.002
	Perceived benefits, 0.195 (1)	
	Perceived security, 0.180 (2)	
	Structural security, 0.169 (3)	
	Context offer, 0.151 (5)	
	System quality 0.146 (6)	
Factor, weight	Mobile application 0.149 (4)	$\lambda = 6.122$, CR = 0.002
Sub-factor, sub-weight	Perceived ease of use, 0.421 (2)	$\lambda = 1.999$; CR = 0.001
	Convenience/practicality of using mobile application, 0.579 (1)	

* λ , lambda; ** CR, consistency ratio.

In addition to the results of factors evaluated by expert, subweights are presented (Table 1). Whilst analysing the factor information, three sub-factors were addressed: information transparency, quality and reliability. According to the experts, the most important information subfactor for the residents of Latvia that determines the trust in mobile banking is the quality of the information provided. Mobile banking is a relatively new service and people are quite indifferent to innovations; therefore, the use of a mobile bank is only possible when the customer is provided with a relevant and, above all, high-quality information.

Analysing customer characteristics, four subfactors promoting mobile banking trust are analysed: tendency to trust mobile banking, age of the client, social influence and computer literacy. Experts dedicated the first position to the computer literacy of customers, which is a prerequisite for using mobile banking.

By studying the sub-factors of mobile Internet factors (Internet existence, signal strength, Internet quality and network coverage), Latvian experts gave the first position to the quality of the Internet. That is obvious because the low quality of the mobile Internet (which can be understood, e.g. as the frequency of occurrence of an error and the pausing of data flows) reduces the access to mobile banking. Quality mobile work is not possible without the high-quality Internet.

Analysing the subfactors of service provider (the bank) (reputation, image, good customer service), Latvian experts gave the first position to the good customer service. Customer service combines several items: the provision of a proper service in a particular situation, customer support to a client who cannot solve the problems, service speed, the competence of consultants and so on. So, the higher the level of service expressed by the above elements, the more the client can trust the mobile service

provider – the bank, because they believe in the correctness, necessity of the offered services and so on.

Whilst analysing the factor of the mobile banking system, six subfactors are considered: system benefits for the user, perceived benefits, perceived security, structural security, context offer, system quality. According to experts, the benefits of the mobile banking system for the user are most important to Latvian consumers. This means that only when Latvian consumers perceive the benefits of the mobile banking system such as the ability to conduct urgent banking operations or check your account balance at any country-specific point, they can rely more on the mobile banking system.

Experts evaluated two subcategories by analysing the mobile application: perceived ease of use and convenience/practicality of using mobile application. Latvian experts singled out the latter as more important subfactor of using a mobile application. A mobile application is not the main instrument used for banking operations. A mobile application is an ancillary tool that enables users to complete payments and to check account balance. Using a mobile application, a number of payments are limited, that is, transactions with large amounts of money cannot be made.

Summarising all the sub-factors, the most important subfactors from all range is convenience/practicality of using a mobile application – the weight is 0.579.

Conclusions

The article analyses the factors determining the trust of individual clients in mobile banking and their subfactors. On the basis of scientific literature analysis, six factors determining the trust were distinguished: information, service provider (the bank), mobile Internet, the mobile banking system, mobile application, customer characteristics. Most authors highlight M-banking system as the most important factor influencing customer trust in mobile banking. In turn, the most important sub-factors are structural security of M-banking System and Perceived benefits. These factors and their subfactors were presented for expert evaluation. Seven experts from Latvian banking sector conducted the study. The AHP used to process expert judgment evaluations, which has led the experts to assign weight to the factors and their subfactors. It has been established by analysing factor weights that the main factor determining the trust of individual customers in mobile banking is customer characteristics. The key sub-factor in customer characteristics is computer literacy. Unmanaged technologies make it difficult for a person to use mobile banking and cannot benefit from it and, of course, trust this service. The experts to the service provider (the bank) attributed the second position, where the most important sub-factor is the bank's Reputation. In fact, the reputation of a commercial bank is one of the most important criteria for choosing a bank. Reputation is the possession of some positive information that the user believes in unconditionally. To the third position in the formation of individual customers trust, experts attributed the mobile banking factor and the most critical sub-factor the convenience/practicality of using the mobile gadget. Mobile banking is not as secure as electronic, so convenience and usability are the key criteria for a bank to attract customers to use mobile services.

Thus, in summary, trust can be said to be one of the most important social aspects in developing the relationship between commercial banks and their users. It is, therefore, expedient to investigate the manifestations of confidence and its influence on other socio-economic areas.

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